

CLAIMS

1. A retainer apparatus for attaching a component to a vehicle structure comprising:
a molded component including a base portion defining a bottom surface having at least one attachment member for attachment to a vehicle structural component, said attachment member being integrally formed as one piece with said base portion;
said attachment member including a cylindrical body portion extending out from said bottom surface to a distal end having a retention member that cooperates with the vehicle structure component to retain said molded component to the vehicle structure;
and
said retention member including a plurality flanges spaced apart from one another and extending out radially from said cylindrical body portion.
2. An apparatus as set forth in claim 1 wherein said attachment member and said base portion are interconnected by at least one continuous unbroken surface.
3. An apparatus as set forth in claim 2 wherein said attachment member extends in a direction traverse to said bottom surface.
4. An apparatus as set forth in claim 1 including a pad formed about at least a portion of said cylindrical body portion by a lower mold portion and wherein said base portion defines a top surface facing opposite from said bottom surface and including at least one opening extending through said base portion from said top surface to said bottom surface adjacent said cylindrical body portion, said opening for receiving an

upper mold portion at a predetermined distance apart from said lower mold portion wherein flange thickness is defined by said predetermined distance.

5. An apparatus as set forth in claim 1 wherein said plurality of flanges comprises three flanges spaced approximately ninety degrees apart from one another.

6. An apparatus as set forth in claim 1 including at least one pad integrally formed in said bottom surface about at least a portion of the circumference of said cylindrical body.

7. An air cleaner housing assembly comprising:

a main housing component;

a base component connectible to said main housing component and defining a bottom surface having at least one attachment member for attachment to a vehicle structure, said attachment member being integrally formed as one piece with said base portion;

said attachment member including a cylindrical body portion with a base extending to a distal end having a retention member that cooperates with the vehicle structure to retain said base component to said vehicle structure; and

said retention member including a plurality flanges spaced apart from one another and extending out radially from said cylindrical body portion.

8. A housing assembly as set forth in claim 7 wherein said attachment member and said base are interconnected by at least one continuous unbroken surface.

9. A housing assembly as set forth in claim 8 wherein said base component defines a top surface facing opposite from said bottom surface and including at least one opening extending through said base component from said top surface to said bottom surface adjacent said base, said opening for receiving a first mold portion to form said flanges.

10. A housing assembly as set forth in claim 9 including a pad portion extending outwardly from said bottom surface and being integrally formed about at least a portion of the circumference of said base by a second mold portion, said pad portion defining an engagement surface that cooperates with said vehicle structure.

11. A housing assembly as set forth in claim 10 wherein said vehicle structure includes a grommet mounted to a vehicle structural component, said retention member being inserted into said grommet with said engagement surface cooperating with said grommet to accommodate variable grommet heights.

12. A housing assembly as set forth in claim 8 wherein said plurality of flanges comprises three flanges spaced approximately ninety degrees apart from one another.

13. A method of forming an air cleaner housing component comprising the steps of:
- providing an upper mold defining a top surface of the air cleaner housing component and including at least one transversely extending male member defining a portion of an attachment member for attaching the air cleaner housing component to a vehicle structure;
- (a) providing a lower mold defining a bottom surface of the air cleaner housing component and including at least one female member defining a portion of the attachment member;
- (b) positioning the upper mold relative to the lower mold by inserting the male member into the female member;
- (c) positioning the upper mold and male member at a predetermined distance apart from the lower mold and female member to define a gap that defines the shape of the air cleaner housing component;
- (d) injecting material into the gap to integrally form the attachment member and air cleaner housing component as a single piece.
14. A method as set forth in claim 13 further including the step of positioning the male member in a non-concentric relationship to the female member such that the material cannot completely surround the male member during step (d).

15. A method as set forth in claim 13 wherein the attachment member includes a cylindrical body portion extending to a distal end and further including the step of forming a plurality of radially extending flanges on the distal end of the attachment member.

16. A method as set forth in claim 15 further including the step of forming three flanges spaced apart from each other by approximately ninety degrees.

17. A method as set forth in claim 15 wherein the male member includes a base that extends to a distal end surface with a sidewall portion extending between the base and distal end surface and wherein the female member includes a female wall portion that extends downward to a bottom face and further including the steps of

positioning the distal end surface apart from the bottom face by a first predetermined distance,

positioning the sidewall portion apart from the female wall portion by a second predetermined distance.

forming the flanges between the distal end surface and bottom face, and

forming the cylindrical body portion between the female wall and sidewall portions.

18. A method as set forth in claim 15 further including the step of integrally forming a pad portion about at least a portion of the cylindrical body portion.